



Department of Toxic Substances Control



Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

Maureen F. Gorsen, Director
700 Heinz Avenue, Suite 200
Berkeley, California 94710-2721



Arnold Schwarzenegger
Governor

February 21, 2006

Mr. Doug Mosteller
Cherokee Simeon Venture I, LLC
4600 S. Ulster Street, Suite 500
Denver, Colorado 80237

Dear Mr. Mosteller:

The Department of Toxic Substances Control (DTSC) received the *Current Conditions Summary Report Lot 1, Campus Bay 1200 South 47th Street*, dated May 12, 2005, the *Current Conditions Summary Report Lot 2, dated June 24, 2005*, and the *Revised Quarterly Monitoring, Well Installation Repair, and Lot 1/Lot 2 Field Sampling and Analysis Plan Campus Bay Site, Former Zeneca, Inc., Richmond Facility*, dated September 19, 2005. All three reports were prepared by LFR Levine-Fricke on behalf of Cherokee Simeon Venture I, LLC, Zeneca, Inc., and Bayer CropScience, Inc., collectively known as the Respondents to DTSC's Site Investigation Order (Docket No. 04/05-006). The current conditions reports provide a description of Lots 1 and 2 of the Zeneca/Former Stauffer Chemical Site, summary of previous site investigations, summary of previous conceptual site models and remedial actions, a description of current site conditions, and an evaluation of data gaps. The revised field sampling plan describes the sampling methods and sample locations to fill the data gaps identified in the current conditions reports. All three documents were discussed with you, LFR Levine-Fricke and DTSC staff during a meeting held on February 16, 2006 at the DTSC Berkeley office. During that meeting sampling locations and analysis were discussed, but revisions to the text of the current conditions were not. The following comments reflect the discussions held during the meeting:

Current Conditions Summary Report, Lot 1:

1. A January 25, 1983 DTSC (formerly Department of Health Services) report indicates that a drum washing shed (also referred to as a Drum Decontamination Shed) was located within the DeGuigne Western Research Center and drainage from this area was collected into a 50,000 gallon sump. A hand drawn map contained in the inspection report shows the drum decontamination shed to be located to the east of an entry guard kiosk and a waste storage area, and to the north of the Devrinol area (see enclosed figure). Aerial photographs and historical records from the early 1980's should be reviewed and included in the report to

- determine whether this feature can be located or likely locations for this area can be identified. Soil and groundwater samples located in these areas should be proposed in the Field Sampling and Analysis Plan, or it should be determined whether adequate sampling has been conducted previously in this area.
2. The specific history (e.g., previous uses of this area, when it was obtained by the Responsible Parties, etc.) of the planter strip along Meade Street should be included in the report.
 3. A detailed description of the demolition activities than what was provided in Section 1.1.2 needs to be included as discussed in our previous meeting. This information needs to include items including, but not limited to a description of any physical features associated with the buildings (e.g., sumps, pits, hazardous substance use areas, etc.), information on the sampling/decontamination, removal and disposal of the hazardous materials/waste, storage areas and their contents, what areas were graded (if any), and if areas were backfilled, what specific areas and the source of the backfill. If not previously sampled, additional sample locations should be proposed in the Field Sampling and Analysis Plan where these features are located.
 4. DTSC understands from a previous discussion that a boat resin manufacturing facility was located in the area that is now the eastern parking lot. This facility should be shown on the historical use figure. A sample location been proposed for this area in the Field Sampling and Analysis Plan.
 5. Hazardous Waste Storage Areas: The location of all hazardous waste and hazardous material storage areas need to be identified on all appropriate figures. In addition, sample locations have been proposed in all previously identified areas. If additional storage areas are identified, they should be included in the Field Sampling and Analysis Plan.
 6. DTSC's July 1, 2005 comments to the *Well Installation, Abandonment, and Well Repair Field Sampling and Analysis Plan* (LFR Levine-Fricke, April 18, 2005) and the *Groundwater Monitoring Assessment and Well Installation, Abandonment, and Well Repair Work Plan, Subunit 1 of the Meade Street Operable Unit* (LFR Levine-Fricke, March 30, 2005) that pertain to groundwater investigation and assessment are also applicable to this report with respect to the data gap evaluation.
 7. It has recently come to DTSC's attention that research wells at the UC Richmond Field Station were installed in the 1950's to a total depth of 100 feet. The wells were used for sewage transport studies and radioactive tracers were used. Based on this information, the Lot 1 industrial water well sampling in the Field Sampling and Analysis Plan should include gross alpha, beta, and gamma radioactive isotopes.
 8. Page 3, Section 1.1.3 should include a description of the former battery manufacturing facility and the location of the facility identified on the appropriate figures. A sample location has been proposed within this former manufacturing area in the Field Sampling and Analysis Plan.
 9. Page 6, Lower Horizon Hydrogeology, 8th line: Please clarify whether the coarse-grained sediments "have been" or "could be" encountered in the lower horizon in localized areas.

10. Page 7, Section 2.1, California Regional Water Quality Control Board: This section discusses a NPDES permit violation in February 1986 and February 1988. Please clarify whether there were two separate violations or whether there is an error in the date.
11. Page 12: Please describe the interior flooring of the green houses and the condition of the flooring. For example did they have dirt or concrete floors?
12. Page 14, Section 3.3.2: Please provide the radioactive licenses held by Stauffer Chemical prior to 1977. In addition, this section should identify which buildings were authorized to store radioactive materials.
13. Page 15, Section 3.4 (UST): Please include the closure letter for the UST remediation provided by Contra Costa County.
14. Page 15, Section 3.5 (Site Utilities): Please describe the backfill material that was used within the utility corridors.
15. Page 17: Please include a description of what a tile drain is.
16. Page 18, Section 4.1.2: Please include a copy of the water supply well boring log with the report.
17. Page 19, Section 4.1.4: This section states that the VOC concentrations from samples collected along the EBMUD water main were not elevated. Please provide the screening criteria used to make this determination.
18. Page 28, Section 6.4: Table 9F indicates that the pH samples collected from soil samples at WRC21 ranged from 2.9 to 3.6. In addition, pH results from sample WRC20 ranged from 3.3 to 4.2. This section should include a discussion of the potential impacts of the low pH and whether the low pH may be an indication of the presence of buried cinders in this area.
19. Page 29, Section 6.5, Cinder Removal: Please state the specific metals associated with cinder material that were found to be elevated above background concentrations.
20. Page 31, Section 7.1, Screening Criteria Selection to Evaluate Current Conditions: This section initially states that consumption of aquatic organisms in East Stege Marsh or San Francisco Bay was considered a complete exposure pathway to hypothetical human receptors. Also, the only complete exposure pathway to the hypothetical ecological receptor was contact to groundwater discharging into San Francisco Bay. Later in this section, the consumption of aquatic organisms was dropped as a pathway due to the length of the transport pathway, and groundwater quality data collected downgradient from Lot 1. Please clarify why the groundwater pathway is a potential exposure pathway to aquatic organisms, but consumption of these same organisms is not considered a pathway. Also, additional proof needs to be provided that the groundwater contaminants found in Lot 1 are not impacting Stege Marsh or San Francisco Bay before this pathway can be dismissed.
21. Page 32, Section 7.1.1, Soil: The last paragraphs states that the soil CHHSLs are based upon dry weight concentrations; however, the samples collected at the site were measured as total weight. As no conversions of the site sample data or the CHHSLs were made, please describe the potential impacts to the site evaluation.
22. Page 33, Section 7.1.2, Groundwater:
 - a. Please provide the rational for using 10 times the NAWQC value as the screening criteria for groundwater.

- b. Please provide the rationale describing why the groundwater beneath Lot 1 is not considered to have a beneficial use.
- 23. Page 34, Metals:
 - a. This section inconsistently compares metal concentrations found at the Site to residential and/or industrial/commercial screening criteria. The discussion should include comparison of metal concentrations to both residential and commercial criteria.
 - b. The discussion of the thallium detections includes a statement that aluminum is commonly misidentified as thallium. If it is believed that the detections were actually aluminum, additional samples should be collected in the areas of S2E 5.5 - 6 and S1E 6-6.5 to verify that the detections are either thallium or aluminum.
- 24. Figure 3-2: This map is a cross-section of water supply wells located on the UC Richmond Field Station. A map depicting the location of the cross-sections should be provided.
- 25. Figure 3-3 appears to be a draft or missing some information. Please review the map and revise or clarify the handwritten notes as necessary.
- 26. It has come to DTSC's attention that the City of Richmond Planning Department required in their 2003 Use Permit for the Campus Bay Business Park a requirement that at the time of demolition of any building that the ground under the building shall be tested for radiation from plutonium and uranium. DTSC reviewed the August 13, 2003 MACTEC Development Corporation report documenting the radiological survey effort conducted for Buildings 18, 90, 91, 94 and 96. The report states that the survey utilized gross gamma scanning measurements over the exposed surface soil. While uranium contamination can be detected using this method, plutonium is primarily an alpha emitter and may not be accurately detected with the methods previously used. Therefore, soil samples should be proposed in the Field Sampling and Analysis Plan within the foot print of the buildings demolished and analyzed for gross alpha and beta particles and gamma radiation.
- 27. Preliminary groundwater data collected by DTSC along East Montgomery Avenue and South 49th Street indicate the presence of volatile organic compounds (VOCs) in the groundwater. As discussed during the February 16, 2006 meeting, additional groundwater samples will be collected adjacent to these areas and added to the Field Sampling and Analysis Plan.

Current Conditions Summary Report, Lot 2:

- 1. Page 2, Section 1.1.1, Site Description, second full paragraph: This paragraph states that demolition and removal of major structures and facilities were conducted in 1999 through 2002. Detailed information regarding the demolition and removal activities should be discussed in this report.
- 2. Page 2, Section 1.1.1, Site Description, third full paragraph: While section 8.0 states that the data will be compiled and additional samples collected, the existing laboratory analytical data for the six stockpiles remaining on Lot 2 should be presented in this report.

3. Page 6, Section 1.1.4, Deed Restrictions: Please delete the last sentence of this section as DTSC has not requested that the deed restriction be amended at this time.
4. Page 6, Section 1.2.1, Fill:
 - a. This section implies that remedial excavations were conducted before and after 1996. The summary of remedial activities found in Section 6 does not indicate the date the activity occurred. Please include the dates when the excavation activity occurred on the table in Section 6 and please ensure that all excavations that occurred within Lot 2 are included.
 - b. This section states that cinders were removed when they were observed to exceed 2 feet in thickness. Please include a discussion in the report describing the rationale that was used to justify leaving cinders less than 2 feet in thickness.
5. Page 7, Section 1.2.2, Upper Horizon Hydrogeology: The shallow water-bearing zone is identified as being found in 1993 from 10 to 20 feet below the ground surface. Hydraulic gradient and velocity were calculated prior to site remediation activities. This section also states that the Upper Horizon is now closer to the ground surface where excavation and demolition activities have lowered the ground surface elevation. The report should include an assessment of the changes to ground water elevations and flow directions, and soil gas movement potentially associated with the earthwork conducted as part of the site investigation and remediation. If sufficient information is not available, this should be stated and identified as a data gap.
6. Page 9, Section 2.1, California Regional Water Quality Control Board, second paragraph: It appears that the investigation conducted in 1980 to characterize the extent of toluene and herbicide contamination along South 49th Street from Montgomery Street Southward to the Upper Lagoon is not discussed in this report. Additional information regarding the specific herbicides, sampling details and remedial actions for both soil and groundwater need to be added to Section 4.1 (Environmental Investigations Prior to 1999) and Section 6.0 (Summary of Remedial Activities).
7. Page 10, Section 2.2, Department of Toxic Substances Control: Please clarify that the hazardous waste permits issued to Stauffer Chemical were Extremely Hazardous Waste Permits related to disposal of hazardous waste.
8. Page 13, Section 2.6, Bay Area Air Quality Management District: The October 2000 Decommissioning and Dismantlement Summary Report (Appendix B.2, Secor May 5, 2000, Hazardous Materials Assessment Report, Phase II Demolition Facilities, page 2, Section 2.0) identified that two incinerators were present on the site. The thermal oxidizer was identified on page 15 of this report. The location of the second incinerator, identified as a "small incinerator" should be determined. In addition, please state whether either or both incinerators were permitted by the BAAQMD, and if so identify the operating parameters.
9. Page 17, Section 3.2, Historical Chemical Use and Waste Characterization:
 - a. Fourth paragraph: This section states that peach pits were used as an ingredient for manufacturing activated carbon for gas masks during World War I. Review of the literature indicates that peach pits may contain small

amounts of cyanide; therefore, soil sampling for cyanide will be added to the Field Sampling and Analysis Plan.

- b. Last paragraph: Please include the results of any soil and groundwater samples collected to determine the extent of toluene contamination. While this section also states that the source of the release was unknown, please describe what steps were taken to try to identify the source area.
10. Page 18, Section 3.3.1, Radioactive Materials: Please identify which buildings were identified in the radioactive material licenses (beginning with the original license) to store radioactive materials. Also, please identify (on a figure) which buildings were surveyed for radiation and the results.
11. Page 19, Section 3.4, Underground Storage Tanks and Sumps: Please state the source of the concrete and soil that was used to backfill the 50,000 gallon sump. Also, please indicate whether the fill material was tested prior to its use.
12. Page 26, Section 4.2.2, Results of LFR Phase II Investigations, Groundwater, first full paragraph: Please describe the type of backfill material that was used in the WRC-01 excavation pit.
13. Page 26, Soil Gas: A brief description of how the soil gas samples were collected should be included. For example, were the samples collected using summa canisters or glass syringes?
14. Page 31, Section 5.2.2, Groundwater:
 - a. Please state the specific total dissolved solids (TDS) data that was used to make the determination that site groundwater exceeded the RWQCB Basin Plan criteria of 3000 mg/l total TDS. The TDS data for both the Upper and Lower Horizons should be provided in this section.
 - b. Please describe the rationale that was used to justify using 10 times the NAWQC and 10 times the PRG as the ecological screening criteria.
15. Page 34, Section 6.1, Cinder Removal: Please identify which specific metals were found to be at elevated levels in the cinders.
16. Page 43, Section 7.1.3, Groundwater: The identified human receptors should also include future construction workers and maintenance workers as they could potentially come into contact with groundwater.
17. Page 52, Section 8.0, Data Gap Investigation:
 - a. An additional bullet should be added describing sample locations that are proposed based upon identification of additional site features. For example, a 50,000 gallon sump is known to be located within the boundaries of Lot 2 and will be investigated.
 - b. First Bullet Item: The depth of the surface soil sample should be collected from 0.5 to 1 foot below ground surface.
 - c. DTSC's July 1, 2005 comments to the *Well Installation, Abandonment, and Well Repair Field Sampling and Analysis Plan* (LFR Levine-Fricke, April 18, 2005) and the *Groundwater Monitoring Assessment and Well Installation, Abandonment, and Well Repair Work Plan, Subunit 1 of the Meade Street Operable Unit* (LFR Levine-Fricke, March 30, 2005) that pertain to groundwater investigation and assessment are also applicable to this report with respect to the data gap evaluation.

18. Appendix D, Lot 1B (Development Phase II) Soil and Groundwater Investigation and Remediation Report, March 8, 2002:
 - a. Review of Figure 8 and Table 15 of this report contains some discrepancies that should be clarified or corrected.
 - i. Table 15 indicates that sample N-SW-4' is still in place while Figure 8 indicates that the soil sample location was removed during excavation.
 - ii. Figure 8 also includes two locations identified as "N-SW-4" and no location identified as "S-SW-4".
 - iii. The 4,4-DDT concentration identified on Figure 8 is 0.130 mg/kg while the concentration listed on Table 15 is 0.150.
 - b. It is unclear why other soil samples were not analyzed for metals given that WRC-05-1.5 contained 7,000 mg/kg of lead. Please explain why no further sampling for metals was conducted from the area around WRC-5.
 - c. Because the detection limits for different classes of compounds were elevated (e.g. SVOCs), the additional soil samples identified in b above should include analyses for chemicals whose detection limits exceed screening values that will be used for risk assessment purposes.
 - d. Table 14 and Figure 7 also contain similar discrepancies.
 - i. Table 14 indicates that sample WRC1-10-8' was left in place while figure 7 indicates that the soil sample location was removed during excavation.
 - ii. Table 14 contains analytical results for sample WRC-1-4-3, WRC-1-5-3, WRC-1-6-3, WRC-1-Product and WRC-1-Product 2; however, neither Figure 7 nor Figure 9b of the Current Conditions Report includes these sample locations.
 - e. Sample WRC-1-32-12 is shown on Table 14 to contain 190 mg/kg toluene, which is in excess of the identified site specific target level (Appendix D, Table A: Hot Spot Excavation Summary - SSTL of 132 mg/kg for toluene) that was set at the time of the remedial work. The first paragraph on Page 35 of the Current Conditions Report states that soil was removed until confirmation samples were below the SSTL of 128 mg/kg. Please resolve the discrepancy of two different SSTLs and why additional soil around WRC-1-32-12 was not excavated and sampled.

Revised Quarterly Monitoring, Well Installation/Repair, and Lot 1/Lot 2 Field Sampling and Analysis Plan:

1. Page 6, Section 2.6, Verification of Pervious Cinder Excavation: Please clarify that the extent of cinder characterization will be conducted regardless of the thickness of the cinders.
2. Page 18, Section 4.0, Laboratory Analysis: Research wells at the UC Richmond Field Station were installed in the 1950's to a total depth of 100 feet. The wells were used for sewage transport studies and radioactive tracers (tritium) were used. Based on this information, the Lot 1 industrial water well sampling should include gross alpha, beta, and gamma radioactive isotopes.

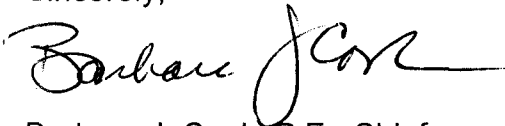
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3. Page 20, Section 6.0, Waste Disposal: Please add that if any waste is found to be a hazardous waste, the containers will be properly labeled and stored, and will be disposed within 90 days of generation.
4. Table 2: The footnote regarding filtration of groundwater for metals analysis should be revised to indicate that the sample will be field filtered.

DTSC's Human and Ecological Risk Division (HERD) also reviewed the current conditions report and field sampling plan, and their comments are enclosed with this letter.

If you have any questions regarding this letter, please call me at (510) 540-3843, or Lynn Nakashima of my staff at (510) 540-3839.

Sincerely,

A handwritten signature in black ink, appearing to read "Barbara J. Cook", with a stylized flourish at the end.

Barbara J. Cook, P.E., Chief
Northern California – Coastal Cleanup
Operations Branch

Enclosures

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cc: Ms. Kimi Klein
Human and Ecological Risk Division
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California 94710

Mr. Mark Vest
Geologic Services Unit
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826-3200



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Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Lynn Nakashima
Site Mitigation and Brownfields Reuse Program
700 Heinz Avenue, Suite 200
Berkeley, CA 90630

FROM: Kimiko Klein, Ph.D. *Kimiko Klein*
Staff Toxicologist
Human and Ecological Risk Division (HERD)

DATE: February 22, 2006 **REVISED**

SUBJECT: CURRENT CONDITIONS SUMMARY REPORT, LOT 1
ZENECA/FORMER STAUFFER CHEMICAL SITE, RICHMOND
PCA11050 Site Code: 201621-00

Background

This 86-acre property was formerly the site of the manufacture of sulfuric acid, super phosphate fertilizer, and pesticides. A research and development facility was also located on this site. There have been hundreds of chemicals detected in various areas of the site, and the site has been the subject of numerous environmental investigations involving soil and groundwater. Most of the buildings on site have been demolished, and areas of contamination have been excavated. The site has been divided into three separate lots for site investigation purposes. Lot 1 is the furthest upland from the San Francisco Bay, and the remaining buildings are currently in use for commercial purposes. The Human and Ecological Risk Division (HERD) has been requested to provide technical support for this site and has participated in numerous meetings on site characterization, risk assessment and public communication issues.

The HERD provided comments on the current conditions report for Lot 1 in a memorandum, dated July 20, 2005. On February 16, 2006, a meeting was held with the Department of Toxic Substances Control (DTSC), the responsible parties and consultants, to discuss the field sampling and analysis plans to fill data gaps identified in the evaluation of current conditions at Lots 1, 2 and 3. The comments of the HERD were included in the

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discussion, and, in this memorandum, the HERD has revised its original comments on the current conditions report for Lot 1 to include the agreements made at that meeting.

Documents Reviewed

The HERD reviewed a document entitled "Current Conditions Summary Report, Lot 1, Campus Bay, 1200 South 47th Street, Richmond, California", dated May 12, 2005, and prepared by LFR Levine-Fricke for CSV I, Zeneca Inc., and Bayer CropScience Inc. The Department of Toxic Substances Control (DTSC) received this report on May 16, 2005. In addition, the HERD reviewed draft tables and figures, presented at the meeting of February 16, 2006, from the field sampling and analysis plan being proposed to address identified data gaps.

General Comments

Lot 1 Comment 1 – Radioactive Materials. A) The area comprising Lot 1 was not extensively used for volume production of chemicals and pesticides; however, research involving pesticides and radioactive materials took place in buildings formerly on this lot, including B-90, B-95, B-96, B-97, B-196, and B-396. In addition, tests were conducted in Building 90 to determine the capabilities of electron beams to melt uranium. The HERD believes that a radiological survey may be needed over areas where these buildings were located. B) Also, super phosphate fertilizer production took place on Lots 2 and 3, and the production process could have increased the concentration of naturally occurring uranium and its daughter products in the slag. These radioactive by-products may still be present on site, including on Lot 1. In response to this concern, soil samples taken in the area of the former super phosphate production and/or storage will be analyzed for the components of slag over Lots 1, 2, and 3. In soil samples where such components are identified, the samples will be further analyzed for radioactive emitters.

Lot 1 Comment 2 – Local Hydrogeology. There are two water-bearing units underlying the site. The HERD requested that a summary of data on connectivity between these horizons be provided along with a discussion of those data and the probability that these two horizons may have intimate connections. Such a discussion should be included in a revised current conditions report or in the forthcoming remedial investigation report.

Lot 1 Comment 3 – Concrete Debris Fill Areas. A) Most of the buildings on site have been demolished, and some of the concrete debris from that demolition has been used as fill on site. The HERD had requested that crushed concrete fill material be tested for asbestos. In response to this comment, samples of concrete fill material will be analyzed for asbestos. These samples should be identified in the sample matrix table in the field sampling plan. B) In addition, the HERD had requested that the locations and depths of areas where crushed concrete fill exist be provided on figures, since this more

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permeable fill could act as a preferential reservoir for groundwater and vapors coming from groundwater or soil. A figure showing concrete fill locations on Lots 1, 2, and 3 should be included in a revised current conditions report or in the remedial investigation report. C) Some fill areas on Lot 3 that extend into the groundwater have been filled with permeable, granular material (Page 64, Current Conditions Report, Lot 3, July 29, 2005). These areas should also be identified in appropriate figures.

Lot 1 Comment 4 – Sample Matrix Table. A) Areas of concern on Lot 1 include: hazardous waste drum staging areas, remaining cinder areas, the battery manufacturing plant site at East Montgomery and South 49th Streets mentioned in Section 8 (Data Gap Evaluation), transformer locations, and all fill areas. The sample locations that will address these areas of concern should be identified on the data gap sample matrix table in the draft field sampling plan. B) The data gap sample matrix table identifying proposed sample locations and providing the rationale for sampling will be revised to include more detail on the rationale for each sample. This table should become a key to easily associating a proposed sample location with past manufacturing and/or remedial activities for all lots, if the detailed rationale identifies the area of concern addressed and abbreviations used for the area, such as "Process Area 11" and "POI-1 Oily Object Area", and cross-references the table in the field sampling plan entitled "Data Gap Evaluation of Decommissioned and Dismantled Facilities".

Lot 1 Comment 5 – Railroad Tracks. Soils in the footprint of the railroad tracks on Lot 1 will be tested for arsenic, as requested in the HERD memorandum, dated July 29, 2005, on the Current Conditions Report for Lot 2. Sampling should be done at intervals to a depth of ten feet below ground surface (bgs), since extensive soil movement has taken place at this site.

Lot 1 Comment 6 – Dioxins and Furans. The HERD had requested that dioxins should be tested for in the area of the low-temperature desorption unit(s), particularly downwind from that unit. There were a number of potential dioxin-generating sources on Lots 2 and 3, including the thermal oxidizer unit, possible small incineration unit, and off-gassing from the production of sulfuric acid and various pesticides. Since so many subsequent excavation and earth-moving events have taken place, a background sample will be taken for dioxins on Lot 1 and four random samples in the cinders on Lot 3 will be analyzed for dioxins. The HERD recommends that US EPA Method 8290 be used for this analysis. These samples should be identified in the sample matrix table.

Lot 1 Comment 7 - Groundwater. A) Grab groundwater samples were and will be taken to evaluate the groundwater for metals and VOCs. Please verify that the collection method used will avoid or minimize loss of VOCs prior to analysis. B) The groundwater was excluded from risk evaluation as a drinking water source based on total dissolved solids concentration. However, these data have not been provided. In response to this comment, total dissolved solids concentrations and pumping capacity of the groundwater will be included either in a revised current

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conditions report or in the remedial investigation report to justify the exclusion of groundwater as a drinking water source. As discussed at the meeting of February 16, 2006, if groundwater cannot be excluded as a potential drinking water source, a risk evaluation will be necessary. This evaluation may be a comparison of groundwater concentrations to risk-based values, such as Maximum Contaminant Level Goals (MCLGs) or California Public Health Goals (PHGs). It will also be necessary to develop remediation goals for contaminants in soil that will be protective of groundwater at their respective Maximum Contaminant Levels (MCLs). C) For volatile organic chemicals (VOCs), these goals protective of groundwater will need to be compared to remediation goals based on the vapor intrusion exposure pathway. The lowest concentration for each chemical should be chosen as the remediation goal.

Lot 1 Comment 8 – Data Presentation. A) All sampling data tabulated either in a revised current conditions report or in the remedial investigation report should include the collection and analytical method(s) used and the detection and reporting limits achieved. The depth at which samples were taken should also be given. B) Each complete data set should be tested for its distribution and the proper statistical method used to calculate a 95% upper confidence limit (UCL) on the mean. This value should be compared to the maximum concentration detected of the chemical in question, and the lower concentration chosen as the concentration to be used in the exposure assessment. Therefore, the tables of statistical summaries for environmental media data should include columns for data distribution identification, the 95% UCL, and the exposure point concentration chosen (either the 95% UCL or the maximum concentration), and the range of detection or reporting limits for each chemical.

Lot 1 Comment 9 - Conceptual Site Model for Complete Exposure Pathways. A) The conceptual site model should be revised to include cinders as a secondary source with aquatic organisms and recreators identified as receptors. B) Groundwater needs to be included in this model as a potential drinking water source, unless there is sufficient justification to exclude it, as discussed in Lot 1 Comment 7 above. C) Migration pathways for chemicals in the upland area to the wetland should include sheet flow, outflows from storm water drains and lagoon overflow. D) The conceptual site model should include potential ingestion of fish caught in the vicinity of the site and contaminated with chemicals associated with the site. E) No current institutional controls should be considered in developing the conceptual site model for this site.

Lot 1 Comment 10 – Risk Assessment. A) Previous remediation activities considered cleanup goals assuming a target risk of one in 100,000 (10^{-5}) and use of the land for only commercial and industrial purposes. The HERD notes that the target risk that will be utilized in future reports will be 10^{-6} and that the future health risk assessment will assume residential or unrestricted land use. B) The HERD further notes that the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) Environmental Screening Levels (ESLs) will not be used in the forth-coming health risk assessment but that California Human Health Screening Levels (CHHSLs), published by the California

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Environmental Protection Agency (Cal/EPA) will be used, if appropriate. For chemicals of potential concern that do not have CHHSLs, the approach described by the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) in their report (*Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil, November 2004, January 2005 Revision*) will be followed, utilizing site-specific parameters where applicable. C) Complete example spreadsheets used to develop site-specific levels for all environmental media should be included in the appropriate documents. These spreadsheets should show all common exposure input parameters and highlight any site-specific parameters used.

Lot 1 Comment 11 – Polychlorinated Biphenyls (PCBs). As discussed at the meeting of February 16, 2006, PCBs must be cleaned up to the U.S. Environmental Protection Agency (US EPA) TSCA standard of one part per million (ppm) or one mg/kg soil. The question of whether this cleanup goal is adequately protective of human exposure at a target risk of one-in-a-million (10^{-6}) must be addressed before any remediation of PCB-contaminated soil takes place. The HERD recommends that a meeting be held with the DTSC and risk assessor(s) for the responsible party in order to agree on an acceptable approach.

Conclusions

The memoranda from the HERD on the Current Conditions Summary Reports for Lots 1, 2, and 3, dated February 2006, should be considered together, because the HERD attempted to avoid redundancy by grouping comments by subject rather than by lot number. Thus, a number of over-arching issues concerning all lots are discussed in this memorandum only.

Many of the comments of the HERD, contained in memoranda, dated July 20, 2005, and July 29, 2005, were addressed in the meeting with the responsible party and consultants on February 16, 2006. The agreements made at the meeting are summarized above, along with further comments. The HERD assumes that the field sampling and analysis plan will be revised to address the comments above and that the current conditions report will be revised as discussed at the meeting.

If you have any further questions, please contact me at (510) 540-3762, (916) 255-6643, or via electronic mail at kklein@dtsc.ca.gov.

Reviewed by:

David L. Berry, Ph.D.
Senior Toxicologist
Human and Ecological Risk Division





Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

Department of Toxic Substances Control

8800 Cal Center Drive
Sacramento, California 95826-3200



Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Lynn Nakashima
Site Mitigation and Brownfields Reuse Program
700 Heinz Avenue, Suite 200
Berkeley, CA 90630

FROM: Kimiko Klein, Ph.D. *Kimiko Klein*
Staff Toxicologist
Human and Ecological Risk Division (HERD)

DATE: February 21, 2006 **REVISED**

SUBJECT: CURRENT CONDITIONS SUMMARY REPORT, LOT 2
ZENECA/FORMER STAUFFER CHEMICAL SITE, RICHMOND
PCA11050 Site Code: 201622-00

Background

This 86-acre property adjacent to the San Francisco Bay was formerly the site of the manufacture of sulfuric acid, super phosphate fertilizer, and pesticides. A research and development facility was also located on this site. There have been hundreds of chemicals detected in various areas of the site, and the site has been the subject of numerous environmental investigations involving soil and groundwater. For site investigation purposes, the site is currently divided into three lots, with Lot 1 the furthest upland, and Lot 3 adjacent to the marsh and bay. Structures on Lot 2 that could have released hazardous chemicals to the environment include: the super phosphate manufacturing plant, phosphorus plant, thermal oxidizer, cooling towers, pilot pesticide plants, hazardous waste storage units, and the chemical and industrial drain systems and sump area(s). Large areas of Lot 2 have been excavated to approximately five feet below ground surface to remove cinders generated from many years of sulfuric acid production and to remove soils contaminated with arsenic, benzene, DDT, and toluene. The Human and Ecological Risk Division (HERD) has been requested to provide technical support and has participated in numerous meetings on site characterization, risk assessment and public communication issues.

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The HERD provided comments on the current conditions report for Lot 1 in a memorandum, dated July 20, 2005. On February 16, 2006, a meeting was held with the Department of Toxic Substances Control (DTSC), the responsible parties and consultants, to discuss the field sampling and analysis plans to fill data gaps identified in the evaluation of current conditions at Lots 1, 2 and 3. The comments of the HERD were included in the discussion, and, in this memorandum, the HERD has revised its original comments on the current conditions report for Lot 2 to include the agreements made at that meeting.

Document Reviewed

The HERD reviewed "Current Conditions Summary Report, Lot 2 Campus Bay", dated June 24, 2005, and prepared for Cherokee Simeon Venture I, LLC, Zeneca Inc., and Bayer CropScience Inc., by Levine-Fricke. In addition, the HERD reviewed draft tables and figures, presented at the meeting of February 16, 2006, from the field sampling and analysis plan being proposed to address identified data gaps.

General Comments

Lot 2 Comment 1 – Backfilled Areas. The HERD had requested that all backfilled areas should be fully described with cross sections provided, if necessary, and that these areas be sampled. In response to this concern, the backfilled areas on Lots 2 and 3 will be sampled and analyzed for all potential chemicals of concern. Bottom samples will be collected in these areas as necessary to show that all chemicals released to the soil have been acceptably removed. See also Lot 1 Comment 3 in the HERD memorandum for Current Conditions Summary Report, Lot 1, for additional comments on fill areas.

Lot 2 Comment 2 - Cinder Areas. Cinder areas left in place in Lots 1 and 2 will be sampled for inorganic chemicals and determination of pH, as requested by the DTSC.

Lot 2 Comment 3 – Former Chemical and/or Industrial Drain Lines. The HERD had requested that soils under the former chemical and/or industrial drain lines along South 48th Street be sampled and tested for those hazardous chemicals that may have been disposed of in those drains during the period when the plants were operating. In addition, the HERD had requested that the soils beneath the chemical drain lines removed during the excavation of the large area in the eastern sector of Lot 2 be similarly tested. In response, the drain lines will be overlaid on a figure identifying past and proposed sample locations in order to show that these soil samples should detect chemicals of concern that may have leaked from the drains to underlying soil. These samples should be identified in the sample matrix table.

Lot 2 Comment 4 – Cooling Tower(s). Soils in the vicinity and downwind of the cooling towers formerly located on Lot 3 will be tested for the presence of hexavalent chromium. There were also cooling towers on Lot 2 in an area already excavated and in the vicinity of the proposed sample, Lot 2-22. Hexavalent chromium analysis should be added to

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this sample as well. Sampling should be done from five to ten feet bgs, since soils in those areas were excavated to five feet bgs. That is, sampling should be done below the depth of overlying mixed cinders. If hexavalent chromium is detected, a health risk-based soil remediation goal should be developed.

Lot 2 Comment 5 – Cyanide. The text of the current conditions report states that super phosphate production is associated with cyanide storage. Therefore, cyanide should be tested for in the vicinity of the former super phosphate plant. There appear to be at least two peach pit areas, one located on Lot 2 in the northeast area and one on Lot 3 (near proposed sample, Lot 3-3). These areas should also be analyzed for cyanide.

Lot 2 Comment 6 - Underground Sump. A 50,000 gallon sump existed to receive surface water runoff in the chemical drain area on this lot. The sump was within the boundaries of the odor excavation area. The walls of this sump were partially removed and the bottom broken through during demolition activities. However, no sampling under or around the sump seems to have taken place. An additional soil sample should be taken beneath the former sump area and so identified on the sample matrix table.

Lot 2 Comment 7 – Background Concentrations. Regional background concentrations for metals from the Lawrence Berkeley National Laboratory (LBNL) *Analyses of Background Distribution of Metals in the Soil at Lawrence Berkeley National Laboratory* report were used as comparators to site data. Since the cinders present over most of the site contain metals concentrations at levels of concern to both human and ecological receptors, a local suite of background concentrations should be utilized instead. The DTSC has collected metals in soil data in the adjacent Harborfront business area that may be suitable for this purpose. The DTSC guidance, *Selecting Inorganic Constituents as Chemical of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities*, February 1997, should be followed.

Lot 2 Comment 8 – Soil Gas Data and Evaluation. A) The analytical method(s) and dates of all soil vapor sampling events should be included in the presentation of soil gas data sets along with information on any rainfall or other weather event that may have occurred prior to sampling that could have affected the results. B) In the Current Conditions Report for Lot 2, the DTSC vapor intrusion model was used to calculate screening criteria for VOCs without CHHSLs. The submitted example soil-gas spreadsheet does not have the capability to calculate a risk-based soil gas concentration, and, therefore, the explanation of the method used to calculate soil-gas screening levels must be expanded. It does not appear that these soil gas screening concentrations were calculated in the same way as they were calculated by the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) (*Human-Exposure-Based Screening Numbers Developed to Aid Estimation of Cleanup Costs for Contaminated Soil*, November 2004, January 2005 Revision, Appendix B: *Derivation of Risk-Based Soil-Gas-Screening Numbers*). The OEHHA first calculated a target indoor air concentration using standard

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US EPA equations. Then the OEHHHA used the advanced soil matrix model to calculate a chemical-specific soil gas to indoor air attenuation factor. Finally the OEHHHA divided the target indoor air concentration by the attenuation factor to obtain the target soil gas screening number. Please show how the approach used in this report compares to the approach used by the OEHHHA and provide evidence that the method used here is congruent. All building characteristics, site-specific soil properties, and chemical-specific parameters should be listed in tables. The calculated attenuation factors should also be presented in tables and text. If this range extends outside the conservative range of factors calculated by the OEHHHA or given by the DTSC in their guidance (*Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air, Interim Final, 2004*), an explanation must be included and the parameters responsible for that extension identified.

Conclusions

The memoranda from the HERD on the Current Conditions Summary Reports for Lots 1, 2, and 3, dated February 2006, should be considered together, because the HERD attempted to avoid redundancy by grouping comments by subject rather than by lot number. For example, issues that involve all lots are discussed in the memorandum for Lot 1.

Many of the comments of the HERD, contained in memoranda, dated July 20, 2005, and July 29, 2005, were addressed in the meeting with the responsible party and consultants on February 16, 2006. The agreements made at the meeting are summarized above, along with further comments. The HERD assumes that the field sampling and analysis plan will be revised to address the comments above and that the current conditions report will be revised as discussed at the meeting.

If you have any further questions, please contact me at (510) 540-3762, (916) 255-6643, or via electronic mail at kklein@dtsc.ca.gov.

Reviewed by:

David L. Berry, Ph.D.
Senior Toxicologist
Human and Ecological Risk Division





Department of Toxic Substances Control



Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

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Arnold Schwarzenegger
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MEMORANDUM

TO: Lynn Nakashima
Site Mitigation and Brownfields Reuse Program
700 Heinz Avenue, Suite 200
Berkeley, CA 90630

FROM: Kimiko Klein, Ph.D. *Kimiko Klein*
Staff Toxicologist
Human and Ecological Risk Division (HERD)

DATE: February 21, 2006

SUBJECT: CURRENT CONDITIONS SUMMARY REPORT, LOT 3
ZENECA/FORMER STAUFFER CHEMICAL SITE, RICHMOND
PCA11050 Site Code: 201623-00

Background

This 86-acre property adjacent to the San Francisco Bay was formerly the site of the manufacture of sulfuric acid, super phosphate fertilizer, and pesticides. A research and development facility was also located on this site. There have been hundreds of chemicals detected in various areas of the site, and the site has been the subject of numerous environmental investigations involving soil and groundwater. For site investigation purposes, the site is currently divided into three lots, with Lot 1 the furthest upland, and Lot 3 adjacent to the marsh and bay. Manufacturing activities were concentrated on Lot 3 and include: the super phosphate manufacturing plant, phosphorus plant, sulfuric acid plant, and areas where ferric acid, Vapam, titanium trichloride, muriatic acid, aluminum sulfate (alum), carbon disulfide, Ordram, Devrinol, and other pesticides were either manufactured or stored. Former structures that could have released hazardous chemicals to the environment include: sumps, chemical and sanitary drain lines, thermal desorption unit(s), transformers, tanks, cooling towers, railroad spurs, maintenance and paint shops, hazardous waste storage areas, and wastewater treatment facilities. All structures have been demolished on Lot 3 with the exception of Building 240. Remedial efforts have been carried out, including: excavating soils contaminated with tetrachloroethylene, toxaphene, and DDT to

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concentrations meeting site-specific industrial-land-use goals; and, moving cinders from other areas of the site and from the University of California Richmond Field Station onto Lot 3, with subsequent mixing, neutralizing, compacting and capping those cinders in place. A biologically active, permeable barrier (BAPB) has been installed at the boundary between Lot 3 (the upland area) and Stege Marsh to reduce the migration of metals solubilized in groundwater to the marsh. The Human and Ecological Risk Division (HERD) has been requested to provide technical support and has participated in numerous meetings on site characterization and risk assessment issues.

On February 16, 2006, a meeting was held with the Department of Toxic Substances Control (DTSC), the responsible parties and consultants, to discuss the field sampling and analysis plans to fill data gaps identified in the evaluation of current conditions at Lots 1, 2 and 3. The comments of the HERD were included in the discussion, and, in this memorandum, the HERD presents its comments on the current conditions report for Lot 3 and the agreements made at that meeting to address those comments.

Document Reviewed

The HERD reviewed "Current Conditions Summary Report, Lot 3 (CCR, Lot 3) Campus Bay", dated July 29, 2005, and prepared for Cherokee Simeon Venture I, LLC, Zeneca Inc., and Bayer CropScience Inc., by Levine-Fricke. In addition, the HERD reviewed draft tables and figures, presented at the meeting of February 16, 2006, from the draft field sampling and analysis plan being proposed to address identified data gaps.

General Comments

Lot 3 Comment 1 – Editorial. A major deficiency of all the current conditions reports that have been submitted is the fact that it is not easy to correlate current condition sample data with former process areas and remedial actions. In addition, there is a plethora of naming conventions that have been utilized in the texts to apply to specific areas of the site, making it difficult to identify the area being discussed without having the particular figure in hand that happens to use that naming convention. For example, a statement that volatile organic compounds (VOCs) have been detected in "POI-2/Area 4" does not provide the reader with location information. The HERD recommends that a convention, based on a site-wide grid system, be adopted for all future figures and utilized to locate areas being discussed in any future reports. In addition, all figures used in future reports should be standardized in such a way so that the locations of former structures and processes, previous remedial activities, and sample data may be overlaid or otherwise correlated upon or with each other. Also, it is important to include a list of acronyms with definitions, if necessary, in all future documents. Finally, a list of synonyms should be included for the pesticides and other chemicals manufactured, stored, or used on site.

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Lot 3 Comment 2 – Super Phosphate Production. As mentioned in the memorandum for Lot 1, the super phosphate production process may have enriched the waste generated from that process for uranium and its daughter products. The production process should have resulted in the generation of large volumes of waste slag. The location(s) of the ultimate transportation and disposal of this slag is of particular interest. Information about the site process should be obtained.

Lot 3 Comment 3 – Site Configuration and Use. A) There are buildings identified in tables that are not sited on any figure in the report (see the table on Pages 17 and 18, CCR, Lot 3). There are also buildings shown on figures that are not listed in this table (for example, Building B-56, shown on Figure 4a, and Buildings B-62 and B-63, shown on Figure 2 in Attachment D-3 – Demolished Facilities, CCR, Lot 3). The table(s), text, and figures should be corrected to provide a complete description of all the former buildings, their uses and locations. B) A former "Ag Yard Pond" existed from 1972 through 1991, and was excavated in 1991. The approximate lateral extent of this excavation should be provided on the figure(s) showing previous remedial activities. A soil sample should be taken below the excavation area. This sample location should be appropriately identified on the data gap sample matrix table as the sample to analyze for contaminants leaking from the former ag yard pond. C) All underground storage tanks were removed, and groundwater and soil samples were collected in the areas surrounding those tanks (Page 24, CCR, Lot 3). A figure showing the locations of all these storage tanks should be provided. A summary of the results of the groundwater and soil analysis should be included in the text. If any of these results indicate the presence of residual contamination, those areas should be sampled again. These soil sample locations should be so identified on the data gap sample matrix table. D) The wastewater treatment system located on the southern portion of Lot 3 should be fully described and its location marked on the Site Utility Map (Page 25 and Figure 8, CCR, Lot 3). E) The current sanitary sewer lines should be shown and clearly marked on a figure. The HERD understands that a sanitary sewer line crosses Lot 3 from the University of California Richmond field station. This line should also be shown on that figure.

Lot 3 Comment 4 – Current Conditions for Soil. A) Three depth profiles are evaluated in the tables included in the current conditions report for Lot 3. The lower boundary of the soil sample data at greater than 5 ft below ground surface (bgs) should be given. The HERD is interested in soil concentrations down to 10 feet bgs for direct soil exposure. B) Bottom sample data for each excavation area should be presented, along with the depth of the sample, to show that the contaminants of concern were removed. These data may be included in the current conditions data set, as appropriate. C) Imported fill material was analyzed for volatile organic compounds, semi-volatile organic compounds, pesticides and metals prior to its use on site (Page 64, CCR, Lot 3). These data should be presented in tabular form, and the fill area where the particular tested fill material was used should be identified.

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Lot 3 Comment 5 – Sampling Grid Size. A sampling frequency of approximately one sample per acre with three or four sample depths per location within a 150 to 200 foot grid size is proposed for Lots 2 and 3. The US EPA states that a default lot size or exposure area for residential land use is 0.5 acres. In the bay area, residential lot sizes may be smaller. Therefore, the HERD recommends a smaller sampling grid of 100 to 150 feet to assure at least one sample per hypothetical residential unit.

Lot 3 Comment 6 – Mercury-Containing Material. Some material present on Lot 3 was originally hauled from the University of California Richmond Field Station and contains cinders and sediments contaminated with mercury. This material was mixed with activated carbon to limit the leaching of mercury and with limestone to make the material more alkaline. Soil and groundwater samples in and downgradient from this material should be tested for the presence of methyl mercury. The proposed collection and analytical methods for methyl mercury should be reviewed by the DTSC prior to use.

Conclusions

The current conditions report for Lot 3 indicate that significantly elevated concentrations remain in soil for numerous inorganic chemicals of concern over much of the area, including arsenic, lead, mercury, and cadmium. There are elevated concentrations of many VOCs in soil gas, including benzene, tetrachloroethylene, trichloroethylene, and vinyl chloride. Shallow groundwater is also similarly contaminated with VOCs.

The memoranda from the HERD on the Current Conditions Summary Reports for Lots 1, 2, and 3, dated February 2006, should be considered together, because the HERD attempted to avoid redundancy by grouping comments by subject rather than by lot number. For example, there are issues that involve all lots discussed in the memorandum for Lot 1.

Many of the comments of the HERD, contained in memoranda, dated July 20, 2005, and July 29, 2005, were addressed in the meeting with the responsible party and consultants on February 16, 2006. The agreements made at the meeting are summarized above, along with further comments. The HERD assumes that the field sampling and analysis plan will be revised to address the comments above and that the current conditions report(s) will be revised as necessary.

If you have any further questions, please contact me at (510) 540-3762, (916) 255-6643, or via electronic mail at kklein@dtsc.ca.gov.

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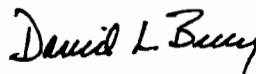
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Reviewed by:

David L. Berry, Ph.D.

Senior Toxicologist

Human and Ecological Risk Division



Stauffer Chemical
Richmond, CA

De Guigne
Western
Research
Center

Drum Decontamination
Shed

50,100
201
5000

Drum Storage
Area
X 2000
X 8000

Sege Plant
(Production
plant)

(One process
Tank in the
Decontamination
Area
is designated
as haz waste
storage)

Organic Chemical Waste

Inorganic
Aqueous Waste

Alum
Pond

Primary
Clarifier

Secondary
Clarifier

Hypalon
lined
Pond

pH Regulated
Flow Control
Valve

Research
Sump

Tanks of for
Acids & Bases
pH Adjustment

Filled-in-
Pond

1st
Evaporation
Pond

2nd
Evaporation
Pond

RELEASABLE

San Pablo Bay